STEM Innovation Proposal
2013-2014

STEM Schools

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I.   Need

STEM schools in Iowa will be as specialized as Pioneer® seed corn—uniquely hybridized and masterfully crafted to grow best where they are planted.   While there is no single recommended model for Iowa STEM Schools, all Iowa STEM schools will be characterized by specific criteria which will foster a consistent approach to STEM education yet allow for the "organic" growth and development of STEM schools matching local strengths, challenges and resources. The key traits shared by Iowa STEM schools will be

  ***Redesigned STEM Learning Environments**
  ***Integrated STEM curriculum, focused on personalized, deeper learning**
  ***Community Based Partnerships, linked by the #IASTEM Community Network**

II.   Solution

In order to foster growth and maximize potential yield for Iowa STEM schools, it is recommended that the Iowa STEM Advisory Council designate funds for two of the three key "reagents" in the STEM school equation:

  *Financial support for K-12 schools to establish redesigned learning environments including funds for a team site visit to an exemplary model school, and funds to equip a redesigned learning environment classroom.
  *Creation of a web-based community forum and online repository for the #IASTEM Community Network. This network will require facilitation, moderation, and support.

III.   TIMEFRAMES:

Timeframe for Redesigned Learning Environments:

  Fall, 2013:
  RFP for Scale Up STEM Classrooms
  Spring, 2014:
  Design, build and equip Redesigned STEM Learning Environments
  a. Equipment, furniture and technology orders and installation
  b. Teacher training in use of Redesigned STEM Learning Environments
  c. Classes and events scheduled into Redesigned STEM Learning Environments.
  Fall, 2014:
  Implementation of Redesigned STEM Learning Environments
  Summer, 2015:
  Assessment

> **Summer, 2013:**
> Hire a Community Moderator and Network Coordinator
> Select a hosting provider and coordinate efforts with the www.iowastem.gov website
> **Fall, 2013:**
> Create forum topics, including topics of interest to STEM business partners, Higher Education Partners, and K-12 STEM Leaders
> Invite membership to #IASTEM Community Network
> Advertise and promote the digital community
> Plan and promote Face-to-Face meetings of #IASTEM Community Network at State STEM Summit or other venues.

III.　Cost

Redesigned Learning Environments

Cost for Furniture and Technology Start-up (per classroom)
~$50,000

STEM Council, public-private partnerships (vendors, businesses and philanthropist) would underwrite the redesigned learning environments. All attempts would be made to leverage existing infrastructure (physical and digital), expertise garnered from previous scale-up initiatives and B2B purchasing practices. *Overall start-up costs per classroom may be significantly reduced if existing district technologies are available.*

Cost for District Team Site Visits
~ $5,000

STEM Council will support travel expenses to visit an exemplary model to insure fidelity of implementation. District team comprised of administration, teacher leaders and students will visit an exemplary STEM model to insure fidelity of implementation.

#IASTEM Community Network

Cost for Statewide Digital Forum & Online Repository, including a Dedicated Position (0.25 FTE) to maintain and grow #IASTEM Community Network
~$15,000.00

Anticipated start-up costs including web-design, writing or publishing. This cost could be considerably less if an existing forum platform is used. Ongoing support necessary to promote, organize, invigorate, moderate and manage the network.

IV.　Measures of success

The ultimate measure of success or failure rests in making a positive difference in the lives of young people and their communities. For Iowa STEM schools, success will be determined based upon the answers to questions such as:

> *"Do students in STEM schools achieve significantly better outcomes in terms of career and college readiness (graduation, post-secondary success, and higher order skills) than students in comparison schools?"*

Beyond the driving question, **success indicators** will include multiple measures such as:
- Development of greater awareness of STEM proficiency skills (i.e. data visualization, experimental design, engineering design and problem solving) among teachers and students in preK-16.
- Understanding of the dispositions necessary for personal growth and development in STEM fields
- Creation of a curriculum tied to discipline-based big ideas, including societal and industrial trends
- Growing emphasis on student self-regulated learning
- Widespread deployment of a deeply integrated STEM content
- Administration of authentic, STEM-based assessments.

Redesigned Learning Environment

Quantity	Unit	Equipment and Infrastructure	Unit Price	Amount	Reference
		Furniture	In dollars	In dollars	
30	Each	Student Chairs	189	5670	Steelcase.com
6	Each	Student Desk	358	2148	Steelcase.com
1	Each	Coach's Desk	358	358	Steelcase.com
1	Each	Coach's Chair	189	189	Steelcase.com
6	Each	Mobile Whiteboards	629	3774	Steelcase.com
		Equipment			
1	Each	Document Camera	150	150	Touchboards.com
6	Each	SmartDesk or Surface Tables	TBD	0	Smart.com
1	Each	Presentation Monitor or Projector	400	400	NEC
		Software Services			
1	Each	Cloud Storage Service (e.g., Dropbox and Google Drive)	120	120	100 Gig Storage (Dropbox)
30	Each	Open Source Productivity Tools (Google Drive)	0	0	Google
30	Each	Data Visualization & Modeling Tools (e.g.,Tinker Plot, Fathom, Geometer's SketchPad, CAD/CAM)	300	9000	Keycurriculum.com
30		Data Collection Tools (e.g., Pasco or Vernier Probeware)	75	2250	Include a variety of probes based on curricular themes
30	Each	Conferencing Tools (e.g., Skype, Google+, Twitter)	0	0	Skype, Google, Twitter
1	Each	Open Source LMS Infrastructure (e.g., Eliademie, Edmodo)	0	0	Elidemie, Edmodo
		Hardware			
30	Each	A combination of Google Chrome, Surface and/or Mac	800	24000	HP, Apple